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10/587,947

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EXAMINER

TISCHLER, FRANCES

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,947	<b>Applicant(s)</b> GOTZ ET AL.	
	<b>Examiner</b> FRANCES TISCHLER	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

Specification and claim objections, 112 and 101 rejections not addressed below are deemed withdrawn.

### ***Claim Rejections - 35 USC § 102/103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1 – 5 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bonte et al (US 6,380,290).**

The rejection stands as per reasons of record as stated in the previous office action of 7/24/08.

Regarding claims 1, 3, 4 and 16: Applicant claims a process for preparing a block copolyetherester elastomer comprising polyester blocks and poly(alkylene oxide) polyol blocks of:

- at least one aromatic dicarboxylic acid or ester derivative thereof,
- at least one alkylene diol,
- a poly(alkylene oxide) polyol, comprising a poly(propylene oxide) end-capped with ethylene oxide,
- an ethylene oxide content of 22 – 90%, and 30% to 70%, by weight relative to the total weight of the poly(alkylene oxide) polyol,
- an unsaturation of the poly(alkylene oxide) polyol, being the total content of vinyl and allyl groups, of less than 35, and less than 25, meq per Kg of the polyol.

Bonte discloses (abstract, column 1, lines 55 to end, column 2, lines 7 – 10, claim 1) a polyetherester copolymer derived from:

- Terephthalic acid or naphthalene dicarboxylic acid or an ester thereof,
- Alkylene diol,

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- Polypropylene oxide glycol which contains ethylene oxide end groups,
- optionally, branching agents, stabilizers and other additives,
- ratio between propylene oxide to ethylene oxide range from 20:1 to 1:6.

Bonte discloses the same components claimed by applicant, including ethylene oxide end groups. Bonte's ratio between the number of EO to PO can be up to 6:1, or up to 85% ethylene oxide and as low as 1:20 or 4% ethylene oxide. Applicant claims 22% to 90%, and 30% to 70%, by weight of ethylene oxide. Upon conversion of number of molecular units to weight percent, Bonte's ratio reads on applicant's ratio.

Regarding claim 2: Applicant claims an Mn of 2500 – 5000 g/mol of the poly(alkylene oxide) polyol. Bonte discloses (column 2, lines 19 – 23) an Mn value of 300 – 4000 of the soft segment (i.e., the poly(alkylene oxide)polyol segment), which falls within applicant's range.

Regarding claim 5: Applicant claims the process according to claim 1 wherein the poly(ethylene oxide) polyol has:

- an ethylene oxide content of between 30 and 70% by weight,
- an unsaturation content of less than 25 meq per kg poly(ethylene oxide) polyol,
- Mn of between 2500 and 5000 g/mol.

Bonte's disclosure, discussed above, reads on applicant's polyol block, on the ethylene oxide content and the Mn values.

Bonte is silent on the unsaturation content of the polyol. However, Bonte's polyester is substantially identical to the claimed polyester, encompassing the molecular weight of the polyalkylene oxide claimed by applicant with the same ratio of EO to PO. Since the molecular weight is related to the amount of unsaturation, as described by Applicant on page 12 of the instant specification, Bonte's polyol inherently contains the same unsaturation as claimed by Applicant. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicant to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980). Alternatively, Applicant submits that Bonte's polyol has an unsaturation of 36 meq/Kg, as shown in Table 1 of the instant application, while Applicant claims an unsaturation of less than 35 meq/Kg. However, it has been held that a range of "more than 5%" would overlap a disclosure of 1-5%, *In re Wertheim*, 541 F.2d 257, 191 USPQ (CCPA 1976), *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Additionally, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (MPEP 2144.05). It would also have been obvious to one of ordinary skill in the art to have varied the unsaturation of the polyol through routine optimization to arrive at the desired results of a product with the proper properties for its intended use, such as tensile strength, tear resistance, etc.

***Claim Rejections - 35 USC § 103***

**Claims 6 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonte et al (US 6,380,290).**

The rejection stands as per reasons of record as stated in the previous office action of 7/24/08.

Bonte's disclosure is discussed above and incorporated herein by reference.

Regarding claim 6: Applicant claims the process according to claim 1, wherein in the block copolyetherester:

- The ratio by weight of poly(ethylene oxide) polyol/aromatic dicarboxylic acid is between 60/40 and 90/10,
- The average degree of polymerization of the polyester block is 3.5,
- The block copolyetherester has an Mn of at least 25,000 g/mol.

Bonte discloses (column 2, lines 9 – 18, table 1) a block copolyetherester made of polyester blocks and poly(alkylene oxide) polyol blocks with a ratio between the soft segments and the hard segments falling within a range such that the Shore D hardness of the segmented polyetherester lies between 75 and 25, which reads on applicant's 60/40 to 90/10 ratio range.

Bonte is silent on the degree of polymerization and the Mn of the copolymer. The degree of polymerization and the Mn are determined by experimental conditions, such as purity of the reactants. By changing the experimental conditions one can control the degree of polymerization and the Mn. The case law has held that "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d618, 195 USPQ 6 (CCPA 1977). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to obtain the degree of polymerization and the Mn desired through routine optimization of the process and thereby obtain the invention.

Regarding claims 7, 10 – 12: Applicant claims a copolyetherester obtained by:

- the esterification process of reacting aromatic dicarboxylic acid or ester derivative thereof, alkylene diol, poly(alkylene oxide) polyol comprising a poly(propylene oxide) end capped with ethylene oxide.

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- Applicant further claims (in claims 7 and 10 – 12) limitations a – f of the copolyetherester, such as polyol content, degree of polymerization, Mn, unsaturation.

Regarding claim 8: Applicant claims butane diol as the alkylene diol. Bonte also discloses (abstract, column 1, lines 55 - end, table 1, claim 1) an alkylene diol. Bonte uses PL 380, PL 580 and PL 720, which are products sold by DSM made of ethylene oxide-capped polypropylene oxide and polybutylene terephthalate. Polybutylene terephthalate is made from butane diol and terephthalic acid, reading on applicant's butane diol.

Regarding claim 9: Applicant claims butylene terephthalate. Bonte discloses (abstract, column 1, lines 55 - end, table 1, claim 1) Bonte discloses the use of polybutylene terephthalate.

Regarding claim 13: Applicant claims the addition of at least one additive. Similarly, Bonte discloses (abstract, column 1, lines 55 - end, column 2, lines 24 – 59, column 3, lines 7 – end, claim 1) the addition of branching agents, stabilizers and other additives.

Bonte is silent on limitations e and f of claim 7. As discussed above, the degree of polymerization and the Mn are determined by experimental conditions, such as purity of the reactants. By changing the experimental conditions one can control the degree of polymerization and the Mn. The case law has held that “A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d618, 195 USPQ 6 (CCPA 1977). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to obtain the degree of polymerization and the Mn desired through routine optimization of the process and thereby obtain the invention.

**Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonte et al (US 6,380,290) in view of Tieke, Bernd (US 5,122,303).**

The rejection stands as per reasons of record as stated in the previous office action of 7/24/08.

Bonte's disclosure is discussed above and incorporated herein by reference.

Applicant claims copolyetherester in elastic fiber or film.

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Bonte discloses (abstract, claim 9) an article of manufacture comprising the copolyetherester and discloses that said polymer is particularly suited for applications that need to withstand high temperatures. Bonte, however, does not teach fibers or films.

**Tieke** discloses (abstract, column 1, lines 40 – 55, column 2, lines 28 – 34) a polyetherester copolymer prepared from:

- a dihydroxy terminated poly(oxyalkylene) from polyethylene glycol or polypropylene glycol or combination of both,
- an aromatic dicarboxylic acid or ester forming derivative thereof
- and an aromatic diol,
- The copolymer is used in films and coatings.

Tieke discloses a polyetherester that is substantially identical to Bonte. Thus, it would have been obvious to one of ordinary skill in the art to have made films and coating using Bonte's polyetherester since Tieke expressly teaches suitability of polyetheresters that are comparable to those of Bonte for making films.

### ***Response to Arguments***

Applicant's arguments filed 11/20/08 have been fully considered but they are not persuasive.

Applicant submits that there are advantages to a polyol having an unsaturated content of less than 35 meq/Kg and a weight ratio of 50/50 - 90/10 of polyol to dicarboxylic acid.

Gijsman's declaration reads that polyol D of comparative example I in the instant application is the same as PL 380 used by Bonte.

Said polyol has an unsaturation of 36 meq/Kg, as shown by Applicant in Table 1 of the instant application. Applicant submits that said unsaturation is higher than the unsaturation claimed in the instant application of less than 35 meq/Kg. However, it has

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been held that a range of “more than 5%” would overlap a disclosure of 1-5%, *In re Wertheim*, 541 F. d. 257, 191 USPQ (CCPA 1976), *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d. 1934 (Fed. Cir. 1990). Additionally, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (MPEP 2144.05).

Also, the unsaturation claimed by applicant has not been shown to be critical for the full breath of the claim. For example, Applicant’s comparative example of polyol F containing an unsaturation of 10 meq/Kg, which falls well within the claimed amount of less than 25 meq/Kg, nonetheless produces an inferior polymer. Therefore, it is not convincing that unsaturation is the only determining factor in obtaining the desired polymer. Moreover, it seems from Applicant’s Tables 1 and 2 that it is a combination of the molecular weights and ratios chosen between PEO and PPO and their degree of unsaturation and overall amounts and ratios of said polyols to amounts and ratios of the hard segments, polycondensation times, etc., that determine the quality of the block polyetherester obtained. Said polyol F with low unsaturation, for instance, contains a 20:80 ratio of PEO:PPO, while polyols A, B and C of the instant claimed invention contain a ratio raging from 40:60 to 50:50. Therefore, it is unclear if the milky product was obtained because of the unsaturation, or the ratio of PEO:PPO, or other factors. As another example, comparative example E has a high unsaturation of 57 meq/Kg but it also has a much higher molecular weight than polyol A, B or C, and will therefore also



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have a higher ratio of polyol to carboxylic acid, all of which dictates the outcome of the product. Since all parameters disclosed by Bonte are within the same range as claimed by Applicant, such as the PEO:PPO ratio, polyol:dicarboxylic acid ratio, etc., it would have been obvious to optimize these variables, including the degree of unsaturation of the polyol, to arrive at the desired results.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **FRANCES TISCHLER** whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Irina S. Zemel/  
Primary Examiner, Art Unit 1796

Frances Tischler  
Examiner  
Art Unit 1796

/FT/